

Determinants of FDI inflows to Next 11 countries: A panel data analysis



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ABSTRACT

As the inclination to FDI shifts from developed to developing economies, investors are flocking to emerging markets, particularly to the Next-11 nations, which render additional growth and investment opportunities. Meanwhile, these countries have become popular FDI destinations; the goal of this study is to look at the major factors that make these countries appealing FDI destinations. As a result, this research examines the factors that influenced FDI inflows into these nations from 1995 to 2019. Market size, trade openness, natural resource availability, economic stability, and infrastructure facilities are among the potential explanatory factors identified in this research. On the panel data set, which includes data from 11 nations, a fixed effect model is used. The data show that market size, trade openness, natural resource availability, and economic stability are all possible predictors of FDI inflows to these nations, whereas infrastructure appears to be a minor one.

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Introduction

According to UNCTAD, foreign direct investment (FDI) is defined as an investment having a long-term connection and indicating an enduring interest in and control by a business resident entity in one country (foreign direct investor or parent firm) of an enterprise resident in a different economy (FDI enterprise or affiliate enterprise or foreign affiliate). Since the 1980s, the globe has seen an exponential increase in Foreign Direct Investment. During the last two decades, the pattern of FDI has shifted from developed to emerging countries.

Foreign direct investment (FDI) is a significant element of the huge private investment that drives global economic growth. FDI provides recipient nations with a variety of economic benefits, including money, foreign exchange, technology, competition, and increased access to international markets (e.g., Brooks and Sumulong, 2003; World Bank, 1999; Crespo and Fontura, 2007; UNCTAD, 1991). The benefits of FDI are well understood in the Next-11 nations in particular. In fact, these countries are competing with one another to entice a great amount of FDI by undertaking myriad promotional policies named liberalizing trade regimes, establishing special economic zones as well as by offering incentives to the foreign investors.

Developing countries, particularly those in the N-11 group, are now viewed as desirable investment destinations because they provide greater potential for development and investment returns. FDI has benefited developing nations more as a source of foreign cash, resources and capital formation, production transfer, technology, skills, innovation, management techniques, and knowledge. The spillover benefits for developing nations are advantageous not only in terms of boosting economic growth, but also in other ways. As a result, the global FDI market for developing nations has become more competitive.

International investors formerly regarded the BRICS (Brazil, Russia, India, China, and South Africa) countries as the global rising market frontiers because of their potential for economic expansion and financial rewards. Instead, this study focuses on "the new kids

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on the block," the "N-11," which has recently been a popular FDI destination. Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Turkey, South Korea, and Vietnam make up the N-11 grouping, which was coined by Goldman Sachs in 2005.

These 11 countries have similar characteristics, such as fast increasing populations and substantial industrial capability or potential. These nations show a rising consumer market with higher earning potential, which opens up commercial prospects for both domestic and foreign companies. The N-11 countries account for 7% of the global GDP and 9% of global energy consumption. These nations are already heavily urbanized in general. More than half of the population lives in cities, and certain countries, such as Korea, Mexico, Iran, and Turkey, are nearly on par with the G6. In these nations, urbanization should help to boost economic growth, notably through boosting productivity.

Furthermore, some of the N-11 countries are attractive infrastructure investment locations. Between 1990 and 2016, approximately \$200 billion was invested in infrastructure projects in these four nations (Mexico, Philippines, Indonesia, and Turkey). Another essential aspect in virtual networking is technological adoption, which is vital for long-term success. The exponential growth narrative in mobile phones is extending to the N-11, with triple-digit increase in recent years in the poorest countries.

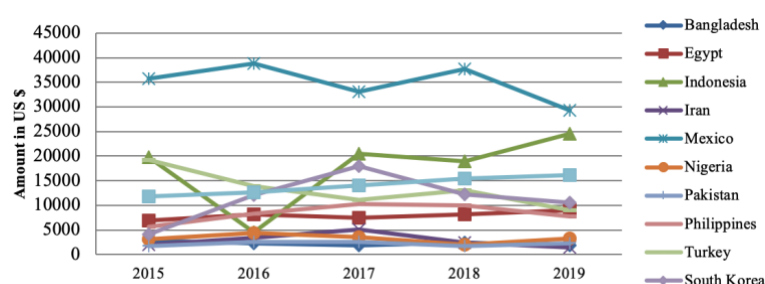


Figure 1: FDI inflows in N-11 countries (in million US\$); *Source:* World Bank Development Indicators

However, the COVID-19 pandemic has adversely affected the world economy. This crisis resulted a drastic fall in FDI as well. All countries around the globe suffered by it more or less. United Nations Conference on Trade and Development (UNCTAD) report depicts that the global FDI flows fell 49% to \$399 billion during January-June period of 2020, compared to \$777 billion during the same period of 2019. This pandemic brings FDI below \$1 trillion for the first time since 2005. According to UNCTAD report, FDI is projected to decline by a further 5 to 10 per cent in 2021 and to initiate a recovery in 2022. However, during this pandemic, one of the lucky few emerging unharmed economically is Bangladesh which is projected to see its economy grow by nearly 4% in 2020.

FDI in South Asia dropped by 31% to \$20 billion and in developing Asia fell by 12% in the first half of 2020. India, the largest FDI recipient in the region, experienced 33% decline to \$17 billion as the country continued to struggle against the pandemic. In the other south Asian economies, where investments are largely dependent on export oriented apparel manufacturing, greenfield investments have observed severe hit due to activity stoppage and contracting global demands. Despite the 2020 drop, FDI remains the most imperative source of external finance for developing countries.

Considering these, this research is intended to define the key determinants that affect the inward FDI to N-11 countries by utilizing panel data from the time frame of 1995 to 2019.

Literature Review

Many economists have paid close attention to the drivers of FDI in developing nations since the late 1990s, when the trend of FDI in developing countries began to rise. For the period 1970-1995, Duran, J. (1999), used panel data and time series methods to determine the drivers of FDI. The market size, growth, domestic savings, national solvency, trade openness, and macroeconomic stability factors are all important drivers of FDI, according to the research. Furthermore, from 1994 to 1998, Bevan, A., and Estrin, S. (2000) investigated the drivers of FDI inflows to transition economies (Central and Eastern Europe) using determinant factors such as nation risk, labor cost, host market size, and gravity factors.

Additionally, Eviş, I., and Amurdan, B. (2007) used a panel data set of 17 developing nations and transition economies from 1989 to 2006 to assess the economic drivers of FDI inflows. The study looked at seven explanatory economic variables: FDI, GDP growth, wage, trade rate, real interest rates, inflation rate, and domestic investment from the preceding period. It was discovered that FDI, which is directly connected to the host country's economic resources, was a key economic factor in the preceding era. Moreover, the inflation rate, interest rate, growth rate, and trade (openness) rate are the major factors of FDI inflows, and FDI inflows provide host nations' economic power.

Besides, the study by Mottaleb, K.A. (2007) revealed that foreign direct investment (FDI) may help developing nations achieve rapid economic growth. The study examined paned data from 60 low- and lower-middle-income nations to try to figure out what variables influence FDI influx in developing countries, as well as show the link between economic growth and FDI. It was shown that nations

with a higher GDP and a higher GDP growth rate, as well as a business-friendly climate with plenty of contemporary infrastructure, such as the internet, can successfully encourage FDI, and FDI has a major impact on a country's economic growth.

In addition, Vijayakumar, N., Sridharan, P., and Rao, K. C. (2010) used a yearly dataset from 1975 to 2007 to perform a panel data analysis to evaluate the determinants that affect inward FDI to BRICS nations. Market size, economic instability and development prospects, labor costs, infrastructural facilities, trade openness, currency value, and gross capital creation were all factors in that research. At the 1% significance level, market size, labor expenses, and currency value are statistically substantial, according to the study.

Using a panel VAR model, Pradhan, R.P. (2011) found the drivers of foreign direct investment in SAARC nations from 1980 to 2010. It was discovered that economic growth, exchange rates, inflation, labor population, trade balance, current account balance, and long-term debt outstanding all had a significant impact on FDI.

Akpan U.S., Isihak S.R., and Asongu, S.A. (2014) investigated the drivers of influx of FDI in BRICS and MINT nations applying the data from the time frame of 2001 to 2011. GDP, natural resources as a proportion of GDP, infrastructure, inflation, trade, and institutional quality are all drivers of FDI, according to the research. It also showed that for both BRICS and MINT nations, GDP is a key predictor of FDI. Furthermore, infrastructure and trade openness are key contributing factors for each of these groupings. Inflation, on the other hand, had a positive but negligible effect. This might imply when inflation rate will be higher, it will entice more FDI into the BRICS and MINT countries. Natural resources and institutional quality, on the other hand, are minor drivers of FDI into both BRICS and MINT, indicating that multinational enterprises FDI decisions are not substantially influenced by these two variables in the host nation.

Hoang H.H. (2015) performed a study that looked at the factors that influenced FDI inflows in ASEAN nations from 1991 to 2009. The study's findings revealed that market size, trade openness, quality infrastructure, human capital, and labor productivity are the major variables that influence FDI inflows positively. Exchange rate policy, real interest rate, political risk, and corruption are all factors that influence FDI inflows.

Using a dataset spanning the years 1994 to 2014, Kishor, N., and Singh, R.P. (2015) studied the effect of variables influencing BRICS nations' FDI inflows. Panel Data analysis was used to look at variables such as the Index of Industrial Production (IIP), Gross Domestic Product (GDP), Foreign Exchange Rate (FOREX), Stock Market Capitalization, Infrastructure Index, and Stock Market Turnover ratio. In general, the empirical results for alternative variables affecting FDI flows appear to be reliable. The study's policy implications include that rising interest in economic integration throughout the world, as well as dependency of FDI between member nations, is a critical element for sustaining growth sustainability.

Shukurov, S. (2016) looked at the factors that influenced inward Foreign Direct Investment (FDI) flows in Commonwealth of Independent States (CIS) nations from 1995 to 2010. The study used panel data models to identify the elements that influence multinational corporations' (MNCs) desire and choice to invest in CIS economies. It was discovered that, despite the presence of significant investment risk in transition economies, the choice of FDI placement is always based on a macro-level study of a country's advantages (FDI stock, market size, natural resource availability, fiscal imbalance and inflation).

Hintoová, A.B., Bruothová, M., Kubková, Z., and Ruinsk, R. (2018) used country level data from 1989 to 2016 to identify the drivers of foreign direct investment inflows in the Visegrad nations. The level of gross salaries and the proportion of educated labor force were found as the most significant factors having a favorable influence on FDI inflows in the study's correlation and regression analyses (OLS and fixed-effect model). Conversely, corporate income tax rates, trade openness, and R&D spending have all been highlighted as variables that have a detrimental influence on FDI.

In the light of above-mentioned studies, this paper will concentrate on the pragmatic examination of the key determinants of FDI in the Next-11 countries.

Potential Variables Determining FDI Inflows

A group of possible descriptive variables are recognized in this study as drivers of FDI inflows to the N-11 nations based on the discussion above. The variables encompass market size, economic stability, natural resource availability, infrastructural facilities, and trade openness.

Market Size

It is inevitable that nations with larger markets attract more FDI inflows than those with smaller markets. In general, market size is governed by GDP, GDP per capita income, and the number of people in the middle class. The indicator GDP at market price expressed in billion US\$ is used to assess market size in this study, and it is predicted to be a positive and substantial driver of inbound FDI.

Economic Stability

Those with stable economies and high growth rates have less economic uncertainty and so attract more FDI than countries with turbulent economies. In this case, the inflation rate is used as a proxy for assessing economic stability, and a high inflation rate is predicted to stifle inward FDI.

Trade Openness

Because so much FDI is focused on exports, trade openness is seen as one of the most important drivers of FDI inflows. It is calculated using the current-price ratio of total exports and imports of commodities and services to total GDP. The broad consensus is that more trade openness is a good thing.

Natural Resources Availability

Many developing economies are deemed to be an attractive destination for avid investors because of their richness in natural resources. The availability of natural resources is measured by the percentage of natural resources to GDP. This study employed fuel exports (% of merchandise exports) as a proxy for natural resources. It is anticipated the availability of natural resources and FDI inflows hold a positive relationship.

Infrastructure facilities

Infrastructure is seen as a key traditional factor in attracting FDI inflows (Vijayakumar, N., Sridharan, P., and Rao, K. C., 2010). Infrastructure is an inescapable component of running a successful business. Foreign investors are drawn to countries with well-developed infrastructure because it lowers manufacturing and transportation costs. As a result, it is unavoidable that good infrastructure has a favorable impact on FDI inflow. Telecommunication, transportation, and power are examples of infrastructural facilities that may be measured in many ways. The number of mobile phones per 100 persons is used as an indication of infrastructural facilities in this study.

Research Methodology

In this project, secondary data are used for all variables of N-11 countries from the time period of 1995-2019. The data relevant to the variables in this paper are accumulated from the World Bank economic indicators. Panel data analysis by using STATA 15 is administered here to seize the vibrant behavior of the parameters and to impart proficient estimation and evidence of the parameters.

Panel data analysis

For identifying the effect of the five dominating variables on inward FDI to the N-11 countries, both time-series and cross-sectional data are employed in this study.

When the data comprises of time series observations of a number of individuals, it is known as panel data (Hsiao, 2007) and it is the most vital analytical tool to handle panel data. It consists of data for n different entities observed at T different time periods which is demonstrated as follows:

$$(x_{it}y_{it}) \quad i = 1, \dots, n \text{ and } t = 1, \dots, T$$

Panel data estimation is performed to internment the dynamic behavior of the parameters and to provide more inventive estimation and information of the parameters. In this article, the data for n=11 entities (countries), where each one is observed in T=25 time periods (1995 to 2019), yielding a total of 275 observations. The data set of this study demonstrates a balanced panel data as it doesn't contain missing data. Panel data estimation offers some advantages. To gather more accurate inference of model parameters it's an inevitable tool. It boosted the consistency of the research irrespective of given sample size, boost degree of freedom, and cope up with multicollinearity among predictor variables. By utilizing this data, it's convenient to oversee for unobserved and immeasurable sources of individual heterogeneity. The panel data model comprises of three different methods including (a) pooled OLS regression, (b) fixed effects model, and (c) random effects model.

(a) Pooled OLS regression: When no distinctions are found among the data matrices of the cross-sectional dimension, it is called pooled OLS regression and is beneficial under the hypothesis that the data set is a priori identical. The model depicts:

$$y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + u_{it}$$

Here, i indicate the entities and t is the time period. By employing this method, all 275 observations can be polled together and considered as if there is no distinction between the cross-sections (countries). But some country-specific elements prevail here that play a key part in this study. Hence, for this study this regression model is not fit for the data analysis.

(b) Fixed effects method: When we need to control omitted variables in panel data and those omitted variables vary through entities but do not change over time, and then fixed effects method is employed (Stock and Watson, 2015). The fixed effects regression model is:

$$y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + u_{it}$$

Here, Z_i denotes unobserved variable that varies from one entity to the next but is constant over time.

(c) Random effects method: It's a substitute model of estimation where the individual-specific effect is a random variable which is uncorrelated with the explanatory variables. It is deemed as a regression model with a random constant term. Here, the variability of the constant from each section comes from the fact that:

$$\alpha_i = \alpha + v_i$$

Here, v_i denotes zero which is standard random variable. So, the model is as follows:

$$Y_{it} = (\alpha + v_i) + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + u_{it}$$

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + (v_i + u_{it})$$

Both fixed effects and random effects models have some benefits and shortcomings, therefore, we need to be vigilant which one to choose. The fixed effects model will engender unbiased estimates of β , and the random effects model will, except in infrequent circumstances, yield bias in estimates of β (Clark and Linzer, 2015). To use random effects model one need to make certain suppositions about the distribution of the random component. Hence, this method is obliged to be employed only if it is required and significant compare to fixed effects model.

For this reason, the pooled OLS model is not employed in this study. Seemingly, for panel data analysis, we need to opt for either fixed effects or random effects model. For balanced data set, fixed effects model is favored. While, when the sample encompasses inadequate observations of the existing cross-sectional units, it is inevitable to use random effect model.

Research Model

Based on the panel data analysis method, the effect of the five independent variables on the dependent variable (FDI) in the N-11 countries is investigated and a research or equation model is constructed. The research or equation model for this study is as follows:

$$LFDI_{i,t} = \alpha + \beta_1 LGDP_{i,t} + \beta_2 INFLA_{i,t} + \beta_3 TRADE_{i,t} + \beta_4 NATRES_{i,t} + \beta_5 INFRA_{i,t} + \varepsilon_{i,t}$$

Where,

$LFDI_{i,t}$ is the log of net inflows of Foreign Direct Investment in US\$ for country i at time period t , α is a constant, $LGDP_{i,t}$ is the log of Gross Domestic Product in current US\$ for country i at time period t which is the measure of market size, $INFLA_{i,t}$ is the inflation rate for customer prices in annual percent for country i at time period t which measures economic stability $TRADE_{i,t}$ is the trade in percent of Gross Domestic Product for country i at time period t , $NATRES_{i,t}$ is the total natural resources rents in percent of Gross Domestic Product for country i at time period t , $INFRA_{i,t}$ is the mobile cellular subscription per 100 people for country i at time period t and $\varepsilon_{i,t}$ is the error term at time period t . And $\varepsilon_{i,t}$ is the error term at time period t .

Empirical Results and Discussion

At the beginning, descriptive statistics has been carried out in the study. The results of descriptive statistics are illustrated in the following table.

Table 1: Descriptive statistics of variables in the study

	Observations	Mean	Std. Dev.	Min	Max
LFDI	269	21.51771	1.737555	14.45545	24.58477
LGDP	273	25.95007	1.117384	23.01246	27.97555
INFLA	271	15.33246	116.04063	-2.710337	206.2627
TRADE	273	59.3738	21.93401	19.93401	184.6863
INFRA	275	40.80173	37.43125	1.87345	97.87358
NATRES	262	11.56876	11.01609	.112035	63.52084

The table depicts that all the variables have range of 262 to 275 observations. Trade openness (TRADE) has the maximum mean value of 59 while inflation (INFLA) has the maximum standard deviation value of 116.72 in the data distribution. It implies the existence of vast variation of inflation in the N-11 countries. On the contrary, GDP has the lowermost standard deviation of 1.11.

Table 2: Panel data estimation results based on fixed effects model

Regressor	(1)	(2)	(3)
Log_gdp	1.306 (11.56)***	1.487 (10.15)***	1.444 (12.24)***
Availability of Natural Resources		0.085 (4.33)***	0.080 (4.15)***
Trade Openness		0.020 (3.45)***	0.021 (3.89)***
Economic Stability			-0.003 (11.17)***
Infrastructure Facilities			0.061 (1.67)*
Constant	-10.876 (3.87)**	-8.839 (5.92)**	-11.780 (5.67)**
Observations	267	256	256
Number of Country	11	11	11
R-squared	0.50	0.58	0.59
Years	1995-2019	1995-2019	1995-2019
Clustered standard errors?	Yes	Yes	Yes

The above table represents a set of OLS estimated regressions of inward FDI on five independent variables. Column (1) specifies a regression of log of FDI on log of GDP only. In this arrangement, the coefficient on the log of GDP is positive (1.306) and statistically substantial at 1% level. It denotes that 1% increase of GDP is linked with 1.31% growth of FDI inflows. It implies that GDP or the market size in this study plays a pivotal role to entice inward FDI to the N-11 countries. However, this result is certainly conditional on omitted variable bias.

In second column of table, the variable percentage of natural resources to GDP and total trade to GDP are incorporated. Inclusion of this variable shows a rise in the value of R-square from 0.50 to 0.58. The coefficient of log of GDP is still positive as expected but it increased from 1.306 to 1.487. Here, both coefficients are substantial at 1% level. It infers that with 1% raise of natural resources to GDP results 0.085% rise in inward FDI. Trade openness variable is statistically significant as well. That implies that, total volume of trade (export and import) of N-11 countries is also a significant determinant of FDI inflow.

Furthermore, in third column, additional two control variables termed economic stability and infrastructure facilities are added. By including these two variables, we observe the peak value of R-squared (0.59). The coefficient of economic stability is negative as anticipated (-0.003) and but this is also statistically significant. So, the policy makers of N-11 countries should be concerned about the inflation rate to attract inward FDI. Then, it is observed that the variable mobile phone per 100 is not statistically significant here. The reason behind this is all of the N-11 countries except South Korea are either newly industrialized or developing country. As these countries lack infrastructure development, there is a scope for other countries to invest here in the field of telecommunication, transportation and electricity. Moreover, when time effects are used it shows statistically insignificant result.

Conclusion

In the coming years, it is anticipated that N-11 countries are to be the next lucrative emerging market in the world economy. This N-11 term is a new grouping, therefore, a scanty of research is done on the determinants of FDI considering these countries. In this connection, this paper aims to pinpoint the determinants of FDI in the N-11 countries during year of 1995 to 2019 in the pursuit of enabling the N-11 countries to progress, maintain and allure even grander FDI inflows. The findings of this study illustrates that GDP and total volume of trade (export and import), natural resources availability are statistically substantial and have positive effects on inward FDI to the N-11 countries. Conversely, inflation rate adversely affects FDI inflow which indicates that a lower inflation rate will entice more inward FDI. Interestingly, the study reveals that the variable infrastructure is not significant, on contrary to the earlier anticipation. This means that infrastructure do not play a major role in attracting inward FDI the N-11 countries.

This study recognized the substantial determinants of inward FDI to the N-11 countries which may offer a budding empirical framework for additional future studies on FDI. The future studies can concentrate on the variables to investigate other prevailing markets or economic alliance acronyms such as G7, E7, ASEAN, NAFTA, ASEAN, MINT and even for future novel economic group acronyms.

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